

CLAIMS

What is claimed is:

1. A method of creating a batch process campaign including a plurality of batches for use in a process control system having a batch creation function in communication with a database containing batch information and a graphical user interface, the method comprising the steps of:

AI sending a first message requesting batch information to the batch creation function;

receiving a second message containing a set of batch information in response to the first message requesting batch information;

displaying the set of batch information using the graphical user interface;

prompting a user to enter a first input identifying a subset of the set of batch information from the displayed set of batch information to be included within a least one batch from the plurality of batches;

prompting the user to enter a second input specifying campaign information to be included within the batch process campaign; and

using the first and second inputs to create the batch process campaign.

2. The method of claim 1, wherein the step of sending the first message requesting batch information includes the step of requesting recipe information.

3. The method of claim 2, wherein the step of requesting the recipe information includes the step of requesting recipe information associated with a setup batch.

4. The method of claim 2, wherein the step of requesting the recipe information includes the step of requesting recipe information associated with a cleanup batch.

5. The method of claim 1, wherein the step of prompting the user to enter the second input specifying campaign information to be included within the batch process campaign includes the step of prompting the user to specify a batch execution mode.

6. The method of claim 1, wherein the step of prompting the user to enter the second input specifying campaign information to be included within the batch process campaign includes the step of prompting the user to specify a maximum number of active batches.

7. The method of claim 1, wherein the step of prompting the user to enter the second input specifying campaign information to be included within the batch process campaign includes the step of prompting the user to specify a number of batches within the batch process campaign.

8. The method of claim 1, wherein the step of prompting the user to enter the second input specifying campaign information to be included within the batch process campaign includes the step of prompting the user to specify a parameter value associated with a process step.

9. The method of claim 1, wherein the step of prompting the user to enter the second input specifying campaign information to be included within the batch process campaign includes the step of prompting the user to specify batch identification information.

10. A system that creates a batch process campaign including a plurality of batches for use in a process control system having a batch creation function in communication with a database containing batch information, a graphical user interface and a processor, the system comprising:

a computer readable medium; and

a plurality of routines stored on the computer readable medium and adapted to be executed by the processor, wherein the plurality of routines comprises:

a first routine adapted to send a first message requesting batch information to the batch creation function;

a second routine adapted to receive a second message containing a set of batch information in response to the first message requesting batch information;

a third routine adapted to display the set of batch information using the graphical user interface;

a fourth routine adapted to prompt a user to enter a first input identifying a subset of the set of batch information from the displayed set of batch information to be included within at least one batch from the plurality of batches;

a fifth routine adapted to prompt the user to enter a second input specifying campaign information to be included within the batch process campaign; and

a sixth routine adapted to use the first and second inputs to create the batch process campaign.

11. The system of claim 10, wherein the first routine is further adapted to request recipe information.

12. The system of claim 11, wherein the first routine is further adapted to request recipe information associated with a setup batch.

13. The system of claim 11, wherein the first routine is further adapted to request recipe information associated with a cleanup batch.

14. The system of claim 10, wherein the fifth routine is further adapted to prompt the user for a batch execution mode.

15. The system of claim 10, wherein the fifth routine is further adapted to prompt the user for a number of batches within the batch process campaign.

16. The system of claim 10, wherein the fifth routine is further adapted to prompt the user for a maximum number of active batches.

17. The system of claim 10, wherein the fifth routine is further adapted to prompt the user for a parameter value associated with a process step.

18. The system of claim 10, wherein the fifth routine is further adapted to prompt the user for batch identification information.

19. A method of executing a batch process campaign including a plurality of batches for use in a process control system having a batch execution function, the method comprising the steps of:

determining a batch execution mode associated with the batch process campaign;

releasing one or more batches from the plurality of batches to the batch execution function based on the batch execution mode; and

sending messages to the batch execution function to cause the batch execution function to execute one or more of the released batches.

20. The method of claim 19, wherein the step of releasing the one or more batches from the plurality of batches to the batch execution function based on the batch execution mode includes the step of releasing a ready batch prior to the complete execution of a currently executing batch.

21. The method of claim 19, wherein the step of sending the messages to the batch execution function to cause the batch execution function to execute the one or more of the released batches includes the step of sending a message to cause the batch execution function to execute the one or more released batches according to the batch execution mode.

AI 22. The method of claim 19, wherein the step of sending the messages to the batch execution function to cause the batch execution function to execute the one or more of the released batches includes the step of sending a message specifying a parameter value associated with a process step associated with the one or more of the released batches.

23. The method of claim 19, wherein the step of sending the messages to the batch execution function to cause the batch execution function to execute the one or more of the released batches includes the step of sending a message specifying a recipe associated with the one or more of the released batches

24. The method of claim 19, wherein the step of releasing the one or more batches from the plurality of batches to the batch execution function based on the batch execution mode includes the step of releasing the one or more batches from the plurality of batches according to a user specified maximum number of active batches.

25. A system that executes a batch process campaign including a plurality of batches for use in a process control system having a processor and a batch execution function, the system comprising:

a computer readable medium; and

a plurality of routines stored on the computer readable medium and adapted to be executed by the processor, wherein the plurality of routines comprises:

a first routine adapted to determine a batch execution mode associated with the batch process campaign;

A1 a second routine adapted to release one or more batches from the plurality of batches to the batch execution function based on the batch execution mode; and

a third routine adapted to send messages to the batch execution function to cause the batch execution function to execute one or more of the released batches.

26. The system of claim 25, wherein the second routine is further adapted to release a ready batch prior to the complete execution of a currently executing batch.

27. The system of claim 25, wherein the third routine is further adapted to send a message to cause the batch execution function to execute the one or more released batches according to the batch execution mode.

28. The system of claim 25, wherein the third routine is further adapted to send a message specifying a parameter value associated with a process step associated with the one or more of the released batches.

29. The system of claim 25, wherein the third routine is further adapted to send a message specifying a recipe associated with the one or more of the released batches

30. The system of claim 25, wherein the second routine is further adapted to release the one or more batches from the plurality of batches according to a user specified maximum number of active batches.

31. A method of editing a batch process campaign including a plurality of batches for use in a process control system having a graphical user interface and a data store, the method comprising the steps of:

prompting a user to enter a first input via the graphical user interface  
identifying one or more unreleased batches from the batch process campaign;  
prompting the user to enter a second input via the graphical user interface  
specifying a change to batch information associated with the identified one or more unreleased batches; and  
storing the change to the batch information together with the batch process campaign in the data store.

32. The method of claim 31, wherein the step of prompting the user to enter the second input via the graphical user interface specifying the change to batch information associated with the identified one or more unreleased batches includes the step of prompting the user to enter the second input while the batch process campaign is executing.

33. The method of claim 31, wherein the step of prompting the user to enter the second input via the graphical user interface specifying the change to the batch information associated with the identified one or more unreleased batches includes the step of prompting the user to enter an input specifying a recipe change to the batch information.

34. The method of claim 31, wherein the step of prompting the user to enter the first input via the graphical user interface specifying the change to the batch information associated with the identified one or more unreleased batches includes the step of prompting the user to enter an input specifying a parameter value change.

35. The method of claim 31, wherein the step of prompting the user to enter the second input via the graphical user interface specifying the change to the batch information associated with the identified one or more unreleased batches includes the step of prompting the user to enter an input specifying an additional batch to be added to the batch process campaign.

36. A system that edits a batch process campaign for use in a process control system having a processor, a graphical user interface and a data store, the system comprising:

a computer readable medium; and

a plurality of routines stored on the computer readable medium and adapted to be executed by the processor, wherein the plurality of routines comprise:

a first routine adapted to prompt a user to enter a first input via the graphical user interface identifying one or more unreleased batches from the batch process campaign;

a second routine adapted to prompt the user to enter a second input via the graphical user interface specifying a change to batch information associated with the identified one or more unreleased batches; and

a third routine adapted to store the change to the batch information together with the batch process campaign in the data store.

37. The system of claim 36, wherein the second routine is further adapted to prompt the user to enter the second input while the batch process campaign is executing.



38. The system of claim 36, wherein the second routine is further adapted to prompt the user to an input specifying a recipe change to the batch information.

39. The system of claim 34, wherein the second routine is further adapted to prompt the user to enter an input specifying a parameter value change.

40. The system of claim 34, wherein the second routine is further adapted to prompt the user to enter an input specifying an additional batch to be added to the batch process campaign.

41. A batch process campaign management system for use in a process control system, comprising:

a batch executive including a batch information database; and

a campaign manager communicatively coupled to the batch executive that exchanges messages with the batch executive, wherein the messages contain batch-related information from the batch information database and campaign-related information generated by the campaign manager in response to a user input.

42. The system of claim 40, wherein the batch executive further includes a batch definition/instantiation function and a batch execution engine.

43. The system of claim 40, further comprising a graphical user interface that is communicatively coupled to the campaign manager, and wherein the campaign manager includes a campaign creation function, a campaign execution function and a campaign editing function.

44. The system of claim 43, wherein the campaign creation function displays batch information using the graphical user interface and the messages containing batch-related information.

45. The system of claim 44, wherein the campaign creation function processes user inputs identifying a set of the displayed batch information to be included within a batch process campaign

46. The system of claim 45, wherein the batch process campaign includes multiple types of batches.

AI 47. The system of claim 41, wherein the batch-related information includes recipe information.

48. The system of claim 41, wherein the batch-related information includes parameters associated with process steps.

49. The system of claim 41, wherein the campaign-related information includes a batch execution mode.

50. The system of claim 41, wherein the campaign manager automatically sends messages to a batch historian that maintains historical campaign information and a security system that controls user access.